Effect of crystallite size and calcination temperature on the thermal stability of single nanocrystalline chromium oxide: expressed by novel correlation

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Abstract: The thermal reaction of chromium acetylacetonate in various organic solvents at 300 degreesC for 2 h yielded an amorphous product. Single nanocrystalline chromium oxide was obtained after being calcined at 300 degreesC for 1 h. The crystallite size of product is in the range of 16-26 nm. In this work, the thermal stability of product was given by BET/BET0. It was found that the crystals of large crystallite size show higher thermal stability than the crystals of small crystallite size. Thermal stability of chromium oxide can be presented by the correlation of the BET surface area after calcination, crystallite size of assynthesized product and calcination temperature (500-900 degreesC) as shown below.

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